

Receipt, Handling, Prioritization, and Data Requirements for Samples Submitted for Testing in Building 4623 of the Materials and Processes Laboratory



! This Instruction Contains
Descriptions of
• **HAZARDOUS OPERATIONS** • **!**

Materials and Processes Laboratory
Materials Test Branch, Building 4623

National Aeronautics and Space Administration
George C. Marshall Space Flight Center
Marshall Space Flight Center, AL 35812

Release Authority	Name	Title	Organization	Date
Office of Primary Responsibility	[s] <u>Gail H. Gordon</u>	Materials Test Branch Chief	EM10	11/15/05



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Revision	Date	Originator	Description	Affected Pages
Baseline	2/4/05	Eddie Davis	Document converted from ED36-OWI-051. Previous history retained in system as part of canceled or superseded ISO Document files.	All
A	11/17/05	Eddie Davis	Hazardous Operations notification added to cover	Cover, ii

This document baselines the Organizational Work Instruction (OWI) for the receipt, handling, prioritization, and data requirements for samples submitted for testing in Building 4623. Any change to this OWI shall be submitted to and approved by the Materials Test Branch Chief, EM10. Revisions may be also be submitted to the concurring organizations listed below for review and concurrence by memo. The original OWI and all changes shall be maintained by EM10.

Concurring organizations:
Building 4623 Test Operations Contractor
EM10 COTR
Industrial Safety, QD50
Environmental Health, AD60M

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1.0 Scope

1.1 Scope

The scope of this OWI is the receipt and handling of material samples and flight hardware submitted for testing to Marshall Space Flight Center's Building 4623. It also addresses requirements for data entry into the Materials and Processes Technical Information Systems (MAPTIS).

1.2 Purpose

The purpose of this OWI is to establish a standard method for the receipt, handling and prioritizing of material samples that are submitted for testing to Building 4623 and also to establish requirements for data entry into MAPTIS.

1.3 Applicability

This instruction applies to the Chemistry Team, Materials Test Branch, of the Materials and Processes Laboratory and **without exception** to all samples for testing in Building 4623.

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2.0 Applicable Documents

MPD 1840.3. *MSFC Respiratory Protection Program.*

MPR 1040.3I. *MSFC Emergency Plan.*

MPR 1840.2B. *MSFC Hazard Communication Program.*

MPR 8715.1B. *MSFC Safety, Health, and Environmental (SHE) Program.*

MWI 3410.1D. *Personnel Certification Program*

MWI 8621.1. *Close Call and Mishap Reporting and Investigation Program.*

NHB 8060.1B. *Flammability, Odor, Offgassing, and Compatibility Requirements and Test Procedures for Materials in Environments that Support Combustion.*

NASA-STD-6001. *Flammability, Odor, Offgassing, and Compatibility Requirements and Test Procedures for Materials in Environments that Support Combustion.*

Current revision of the Organizational Work Instructions for the specific task being performed:

EM10-OWI-CHM-032. *Ambient LOX Impact Testing.*

EM10-OWI-CHM-033. *High Pressure Impact Testing.*

EM10-OWI-CHM-034. *Flammability Testing.*

EM10-OWI-CHM-035. *Frictional Heating Testing.*

EM10-OWI-CHM-036. *Wire Insulation/Electrical Overload Testing.*

EM10-OWI-CHM-037. *Promoted Ignition/Combustion Testing.*

EM10-OWI-CHM-038. *Wire Arc Tracking Testing.*

EM10-OWI-CHM-039. *Toxicity Testing.*

EM10-OWI-CHM-040. *Outgassing Testing in accordance with ASTM E595-93.*

EM10-OWI-CHM-042. *Test Sample Preparation for Testing in Building 4623.*

EM10-OWI-CHM-050. *Building 4623 Guidelines for Test Operations.*

EM10-OWI-CHM-052. *Environmental Gas Laboratory.*

EM10-OWI-CHM-056. *Clean Room/Flow Bench and Deionized Water Sampling and Analysis.*

EM10-OWI-CHM-058. *Chemical Hygiene Plan for Building 4623.*

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EM10-OWI-CHM-059. *Oxygen Index Test.*

EM10-OWI-CHM-061. *High Pressure Impact Testing (Test Point™).*

EM10-OWI-CHM-062. *Autogenous Ignition Temperature.*

EM10-OWI-CHM-063. *Temperature Oxygen Index Test.*

EM10-OWI-CHM-064. *Heated Promoted Combustion Testing.*

Note: Personnel **shall** always **refer** to the current revision of each applicable document.



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3.0 Definitions

3.1 Definitions

EM10 test point of contact. NASA engineer responsible for approval/development of test plans, subsequent data analysis, and writing/approval of memos for a specified test, as well as oversight of maintenance and upgrades to the specified test systems.

NASA. Marshall Space Flight Center EM10 responsible personnel.

Sample receipt technician. The person responsible for receiving and logging all test requests into the MAPTIS database. This person must also mark the test samples with the request number generated by MAPTIS to ensure samples are identified with the proper test documentation.

Test engineer. The person responsible for correctly following the approved test plan for a specific test from sample receipt to test data evaluation.

Test operator. The person responsible for conducting the test under the guidance of the test engineer.

Work package. The folder containing the test request, signed test plan, product data sheets, Material Safety Data Sheets (MSDSs), sample preparation information, raw test data, data entry printouts, printouts of previous test data on the same or similar materials, and three copies of pre-and post test photographs.

3.2 Acronyms

MAPTIS Materials and Processes Technical Information System

MSDS Material Safety Data Sheet

MUA Materials Usage Agreement

OWI Organizational Work Instruction

PPE Personal Protective Equipment

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4.0 Instructions

4.1 Receipt

All facility personnel may accept test requests and samples; however, it **shall be** the responsibility of the accepting party to ensure safe delivery of the test request and test samples to the sample receipt technician. The exception to this procedure is flight hardware sent for toxicity testing.

All flight hardware that arrives at Building 4623 for toxicity testing **shall be accompanied** by a hardware representative or received/signed for by a hardware representative. This applies to actual flight items only and not to qualifying units. A hardware representative **shall be** project designated. The hardware representative **shall place** the flight hardware directly into the test container, and only then **shall** the flight hardware **be transferred** to the Toxicity Laboratory personnel.

4.2 Required Information

4.2.1. The sample receipt technician **shall examine** the NASA/MSFC Test Request Worksheet to ascertain that it contains the following minimum information, which the technician **shall input** into MAPTIS, to complete the NASA MSFC Test Request Form (EM10-F-CHM-002). (Section 7.0, Figure 1 shows a typical form, which MAPTIS prints.)

- Requester's Name
- Requester's Organization
- Requester's Address
- Requester's Phone Number
- Manufacturer's Designation
- Manufacturer's Name, City, State, Zip Code
- Tests Requested
- Use Atmospheres
- Project
- Cure Time, Temperature, Pressure
- Special Instructions, if any

4.2.2. *If any of the above information is missing or is unclear*, the sample receipt technician **shall notify** the EM10 test point of contact (or, in this person's absence, the test engineer) who then **shall contact** the test requester for the necessary information or clarification

4.2.3. The sample receipt technician **shall verify** that an MSDS or an exclusion statement accompanies the test samples. *If this document is not provided*, the sample receipt technician **shall obtain** one either from the material's manufacturer or from the test requester.

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4.3 Sample Login

The information on the test request **shall be logged** into the MAPTIS database. At that time, a request number **shall be generated**. This number **shall be** on all paperwork generated for this particular test, and the Original Test Request Folder **shall be created**.

4.3.1. The following information constitutes the Original Test Request Folder:

- Test request worksheet from the submitting organization/individual
- NASA/MSFC Test Request Form generated through MAPTIS
- Product Data Sheet (if obtainable)
- Material Safety Data Sheet or exclusion letter
- Any special test requirements
- All pertinent communication between test requester and test facility.

4.3.2. After the pedigree is completed, the folder **shall be sent** to the test engineer, and the step *Pedigree* **shall be marked** complete in the MAPTIS scheduling/tracking database.

4.4 Identification Marking

The samples **shall be marked** with the request number generated by MAPTIS. The sample **shall not be marked** directly so as not to contaminate the test material. Preferably, the material **shall be stored** in a plastic bag, and the bag **shall be marked** with the test request number and the name or NASA-STD-6001 test number that was requested. Various sized bags **shall be obtained** from the sample preparation laboratory.

4.5 Insufficient Material

The EM10 test point of contact (or, in this person's absence, the test engineer) **shall contact** the test requester when additional material is needed to complete requested tests.

4.6 Assignment of Priorities and Due Dates

The Original Test Request Folder **shall be delivered** to the EM10 point of contact for test plan approval and assignment of priority. Priorities **shall be assigned** as follows:

4.6.1. **0:** Emergency. This designation **shall be used** only for those tests that must be given the top priority for Building 4623 resources. Test requests assigned a 0 priority **shall be completed** within 1 week.

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4.6.2. **1:** High Priority. Tests requests assigned a 1 priority **shall be completed** within 2 weeks.

4.6.3. **2:** Project Priority. Test requests assigned a 2 priority **shall be completed** within 3 weeks. This priority is usually assigned to project-related tests.

4.6.4. **3:** Outside Research Priority. Test requests assigned a 3 priority **shall be completed** within 4 weeks. This priority is usually assigned to research related tests.

4.6.5. **4:** Facility Research Priority. Test requests assigned a 4 priority **shall be completed** within 1 year. This priority is usually assigned to facility research tests, *e.g.*, extra thresholding or data-generating tests performed to fill data gaps in the MAPTIS database.

4.7 Work Packages

After the approved Original Test Request Folder has been returned to the sample receipt technician, the individual test work packages **shall be completed**, and the priority **shall be completed** to MAPTIS. Work packages **shall be completed** all material from the original folder and the applicable test data sheet printed from MAPTIS. At this point, the samples for testing **shall be completed** to the Sample Preparation Laboratory. The work packages **shall be completed** back to the test engineer for assignment of due dates, which are based on the completion date automatically assigned by MAPTIS. The work package **shall be completed** complete in the MAPTIS scheduling/tracking database. After due dates have been assigned, the work package **shall be completed** to the Sample Preparation Laboratory for the material samples to be prepared for the requested tests.

4.8 Test Data

4.8.1. Upon completion of testing, the data **shall be entered** into the MAPTIS database by the sample receipt technician. The test engineer **shall assure** correct data entry and **shall perform** a data analysis. The data analysis **shall include** review of previous test data on the same and/or similar materials. This analysis **shall verify** data consistency or identify data irregularities. *If data irregularities are identified*, the test engineer **shall notify** the EM10 point of contact of the finding. The test package provided to NASA **shall contain** the following items:

- Test request worksheet from the submitting organization/individual
- NASA/MSFC Test Request Form generated through MAPTIS
- Product Data Sheet (if obtainable)
- Material Safety Data Sheet or exclusion letter
- Any special test requirements

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- All pertinent communication between test requester and test facility.
- Test results
- One copy of each sample photograph.

4.8.2. The EM10 point of contact **shall perform** a second data analysis and **shall write** a memo to release the data to the test requester. The memo **shall be signed** by the appropriate NASA management.

4.9 Excess Samples

4.9.1. *If excess sample material remains after the completion of all requested tests,* the excess sample material may be scheduled for additional testing by the test engineer. This additional testing may include additional thresholding tests or totally different tests. The additional tests **shall be** with the cognizance of the EM10 point of contact. These tests **shall serve** to fill data gaps in the MAPTIS database. This testing **shall be conducted** on a priority 4 basis.

4.9.2. *If the test requester has asked that the excess material be returned,* no tests other than the specific requested tests **shall be performed**. After completion of all requested tests, the test engineer **shall notify** the sample preparation laboratory personnel, who **shall package** the material for shipment back to the test requester. EM10 personnel **shall handle** the shipping of the package.

4.9.3. Tested samples and excess untested samples **shall be maintained** by EM10 for a period of not less than 5 years. Untested flammable liquid sample material, however, **shall be discarded** within 4 weeks of the completion of testing.

4.10 Archival Data Files

The test request, product data sheets and MSDSs, one copy of each sample photograph, test results and analysis, correspondence, and the final report **shall be kept** in a ready-access file. These records **shall be indexed** by the request number for a minimum of 5 years after the actual date of testing. Thereafter, these data **shall be placed** in storage for an indeterminate period.

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5.0 Notes

Custodians for EM10-OWI-CHM-051	
Master List and Document Control	EM10 Management Support Assistant
Alternate Document Control	EM10 Group ISO Representative
Records	Materials Test Branch ISO Representative
Calibration	Materials Test Branch Calibration Contact
Memoranda	Materials Test Branch ISO Representative

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6.0 Safety Precautions and Warning Notes



The sample receipt technician **shall wear** disposable gloves when handling all test samples. This is necessary not only to protect the individual but also to protect the material from contamination.

An MSDS or exclusion statement **shall accompany** all samples submitted for testing.

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7.0 Attachments, Data, Reports, and Forms

NASA MSFC TEST REQUEST FORM			
TEST REQUEST TO BE COMPLETED BY TEST REQUESTOR		TO BE FILLED OUT BY FACILITY	
NAME/E-MAIL ADDRESS:	ORGANIZATION:	COORDINATOR:	
		REQUEST NO.:	
ADDRESS:		TEST FACILITY:	
		MATERIAL CODE:	
DATE:	PHONE/FAX:	MUA NUMBER (REFERENCE):	
MANUFACTURER'S DESIGNATION: (Material or Hardware Name)		MANUFACTURER'S NAME, ADDRESS AND PHONE:	
MSDS ATTACHED: YES ____ NO ____ PRODUCT LITERATURE ATTACHED: YES ____ NO ____			
MATERIAL BATCH/LOT #:	SPECIFICATION:	CHEMICAL CLASS:	PART/SERIAL #:
REQUESTER'S TRACKING #:	NASA-STD-6001 TESTS: REQUESTED TEST(S) SP-R-0022 1 2 3 4A 4B 7 8 10 13a 13b 14 15 17 18 VCM OTHER/SPECIAL TESTS:		
FLIGHT HARDWARE: YES: ____ NO: ____			
VEHICLE:	PROJECT:	GENERIC USE:	
INTENDED APPLICATION:	USE THICKNESS (in.):	SUBMITTED THICKNESS (in.):	
USE ATMOSPHERE/FLUID:	USE PRESSURE (psia):	USE TEMPERATURE (f):	
CURE: PHASE TIME	TEMPERATURE (f)	PRESSURE (psia)	
QUANTITY OF MATERIAL EXPOSED: SURFACE AREA (in ²) WEIGHT (lb) ____	SAMPLE SIZE SUBMITTED:	NO. OF SAMPLES SUBMITTED:	
SPECIAL INSTRUCTIONS/TEST PLAN:			
TEST NO./DESCRIPTION: 1 - UPWARD FLAMMABILITY 2 - HEAT AND VISIBLE SMOKE RELEASE RATES 3 - FLASH POINT OF LIQUIDS 4A - ELECTRICAL WIRE INSULATION 4B - ELECTRICAL OVERLOAD 7 - OFFGASSING (TOXICITY) 8 - FLAM TEST IN VENTED OR SEALED CONTAINERS 10 - SIMULATED PANEL OR MAJOR ASSMB. FLAM 13a - AMBIENT IMPACT LOX 13b - HIGH PRESSURE IMPACT (LOX OR GOX) 14 - PNEUMATIC IMPACT 15 - REACTION OF MATERIALS IN AEROSPACE FLUIDS 17 - UPWARD FLAM IN GOX (PROMOTED COMBUSTION) 18 - ARC TRACKING FHT - FRICTIONAL HEAT TEST VCM - OUTGASSING (TVS)			

Figure 1.
Typical NASA/MSFC Test Request Form.

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8.0 Records

Records for the Building 4623 shall consist of (a) memoranda that contain test results and that are stored electronically in the Materials and Processes Technical Information System (MAPTIS) and (b) calibration records.

8.1 Memoranda

Memoranda containing test results shall be retained indefinitely by EM10. These memoranda shall be stored electronically in the MAPTIS database and shall be accessible by test request number or memorandum number.

8.2 Calibration Records

8.2.1. All equipment requiring calibration shall be in current calibration, in accordance with EM10-OWI-CHM-050 (current revision), *Building 4623 Guidelines for General Operations*.

8.2.2. Form EM10-F-CHM-018, current revision (Figure 1, section 7.0), shall be used to document the calibration of all Category IV and Category V equipment.

8.3 Maintenance of Records

8.3.1. Memoranda less than 10 years old shall be maintained in ready-access files in MAPTIS; memoranda 10 years old or older shall be automatically transferred to historical files.

8.3.2. Calibration records shall be maintained on site for a minimum of 10 years, filed and indexed by test request number. These shall be stored in a manner that will protect them, *e.g.*, in a test folder stored in a metal file cabinet. After 10 years, calibration records shall be transferred to historical files.

8.3.2. The original test records shall be saved for a minimum of 5 years.

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9.0 Tools, Equipment, and Materials

MAPTIS **shall be used** by all Building 4623 personnel for sample login, assigning priorities, data entry, data analysis, and data report memos.

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10.0 Personnel Training

To be credentialled in sample receipt, all technicians **shall complete** training in the following areas:

- Introduction to Hazard Communication Standards
- General Safe Laboratory Practices
- Hazardous Waste Disposal.

Credentialling also requires:

- Successful completion of an annual physical examination conducted by the medical facility at Marshall Space Flight Center (or equivalent), including a hearing exam
- A demonstration of knowledge of the test and equipment by the completion of two successful test sets under the supervision of the test engineer.
- A demonstration of knowledge of the OWI. Candidate test operators **shall thoroughly read** the test OWI and **sign** a statment confirming that they have read and understand the OWI. Each **shall be issued** a personal copy of the OWI.
- Passing of a written test covering the OWI. The test **shall be administered** by the test engineer.

A copy of the written test, along with the signed statement and the training record, **shall constitute** verification of credentials. Training records **shall be kept** on file as proof of training. These records **shall include** training expiration dates and required refresher courses.

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EMERGENCY PHONE NUMBERS

Emergency..... 911

Medical Center..... 4-2390

Industrial Safety..... 4-0046

Chemical Spills..... 4-4357

Safety Monitor

Building 4623..... 5-0358